



Complicating Categories: How Historical Documents can Impact Osteological Interpretations

Alysha Lieurance¹, Christine Bailey², and Amanda Wissler³

¹University of Pittsburgh, ²Cleveland Museum of Natural History, ³University of South Carolina



UNIVERSITY OF
South Carolina

Introduction

Racial identifiers in US historic identified skeletal collections often simplify data into “Black” and “White”, obscuring both the heterogeneity of the sample as well as potential selection biases inherent in the collection’s creation. This study uses publicly available death certificates from 1911-1938 to establish the birthplace data of 807 white male individuals whose skeletonized remains were once housed or are currently housed within the Hamann-Todd Osteological Collection (HTOC) and compares it to the birthplace data for 111,548 white males in Cuyahoga county to see if the HTOC is a representative sample of the Cleveland population. Then a case study of individual HTH 1684 is presented to show how birthplace data add much needed context to our interpretations of individual health histories.

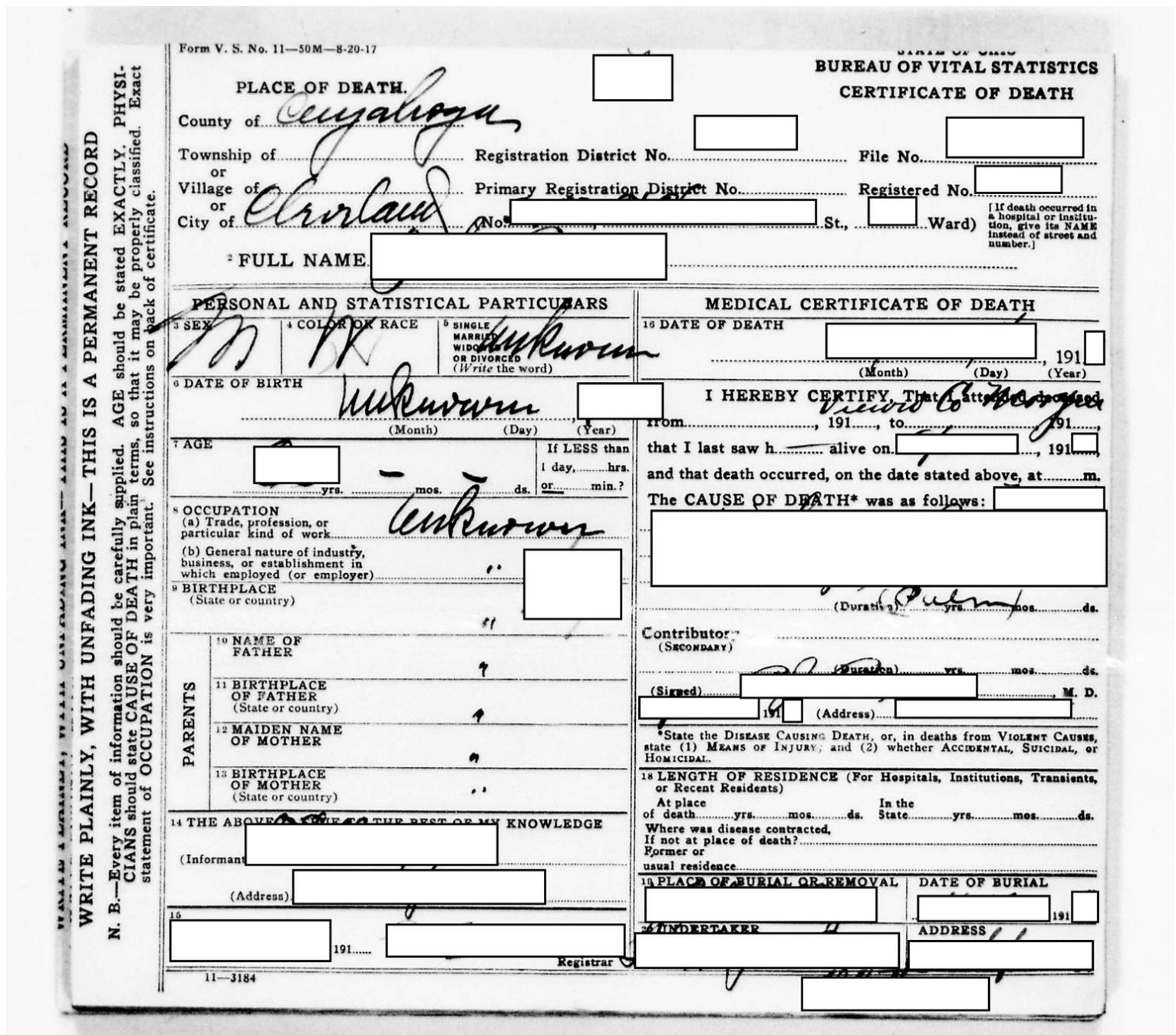


Fig 1. An Ohio Death Certificate with identifying information redacted

Materials and Methods

The Hamann-Todd Osteological Collection contains autopsy records for 2,893 individuals. Death certificates for white male individuals accessioned into the collection were located in the microfilms at the Cleveland Public library, digitized, and hand transcribed into a database (Table 1). The baseline data for Cleveland were pulled from transcribed image indices from the Ohio Deaths 1908-1953 collection¹ and incorporated into the database (Table 2). Data were revised to standardize place names and fix some transcription errors. Using a χ^2 test, the distribution of US-born and European immigrant individuals in the Hamann-Todd collection was compared to the broader distribution from Cuyahoga County death certificates.

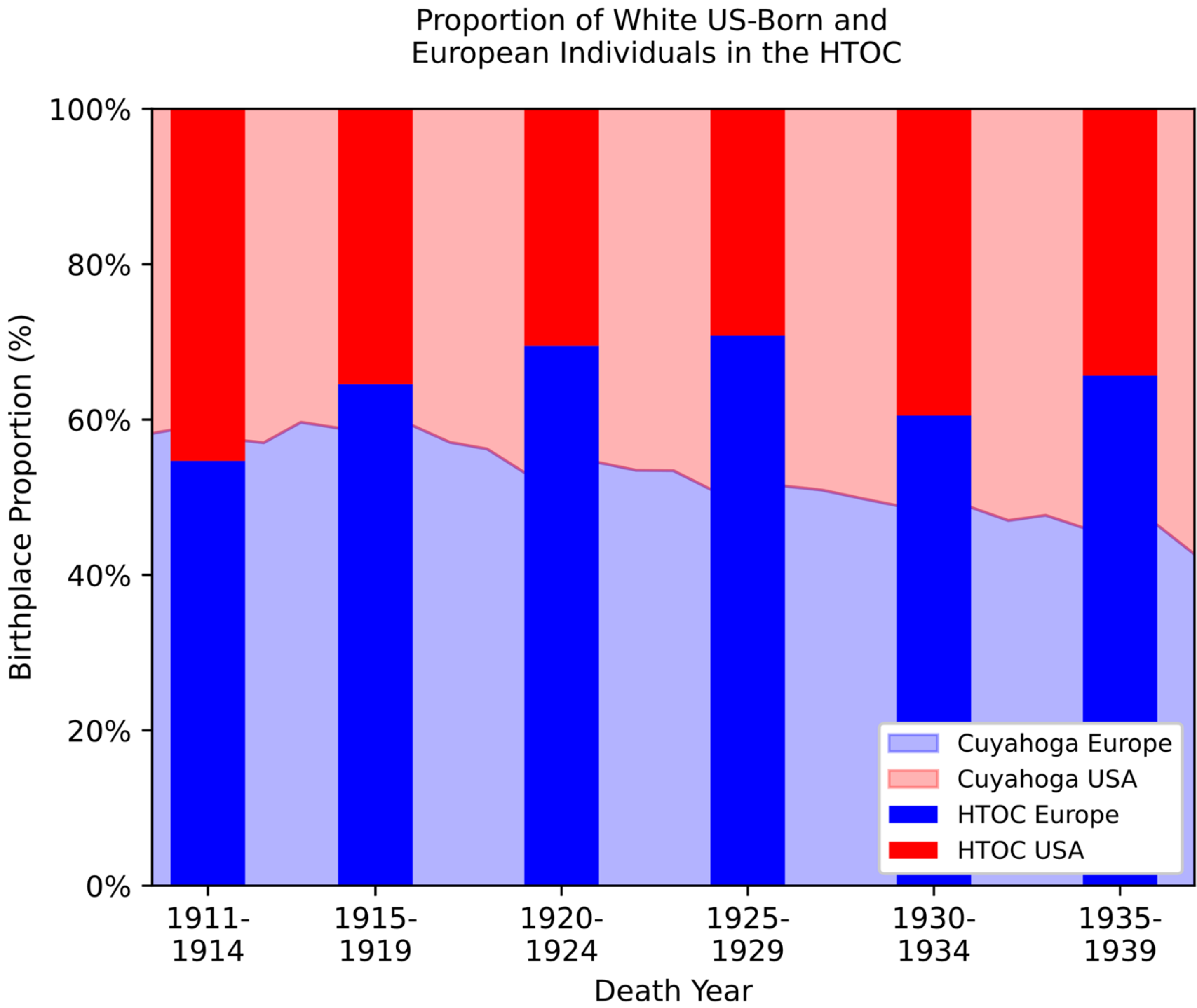
Table 1. HTOC Counts by Birthplace

Death Years	US-Born	European Immigrants	Total
1911-1914	29	35	64
1915-1919	45	82	127
1920-1924	50	114	164
1925-1929	47	114	161
1930-1934	45	69	114
1935-1948	58	119	177
Total	274	533	807

Table 2. Cuyahoga County Counts by Birthplace

Death Years	US-Born	European Immigrants	Total
1911-1914	4839	6662	11501
1915-1919	7501	10543	18044
1920-1924	7380	8787	16167
1925-1929	9623	10217	19840
1930-1934	10679	10047	20726
1935-1948	13640	11630	25270
Total	53662	57886	111548

Results



Discussion

Birthplace Data

- A χ^2 test was performed comparing the distribution of birthplaces between the Hamann-Todd collection and the Cuyahoga county certificates from 1911-1938, and found a significant difference ($\chi^2=60.12$, $p<0.001$), indicating that the collection is a biased sample of local deaths. Male European immigrants are over-represented in the HTOC compared to white US-born males. Figure 2 shows that the underrepresentation of US-born individuals increased over time, coming to a peak in the 1920’s.

- Ohio Body Claim Laws:
 - Ohio Code Section 1713.34 “Superintendents of city hospitals, directors or superintendents of city infirmaries, county homes, or other charitable institutions, directors or superintendents of workhouses ... shall notify the professor of anatomy. ... If after a period of **thirty-six hours** the body has not been accepted by friends or relatives for burial at their expense, such superintendent, director, or other officer ... shall deliver to such professor or secretary, for the purpose of medical or surgical study or dissection or for the study of embalming, the body of any such person”

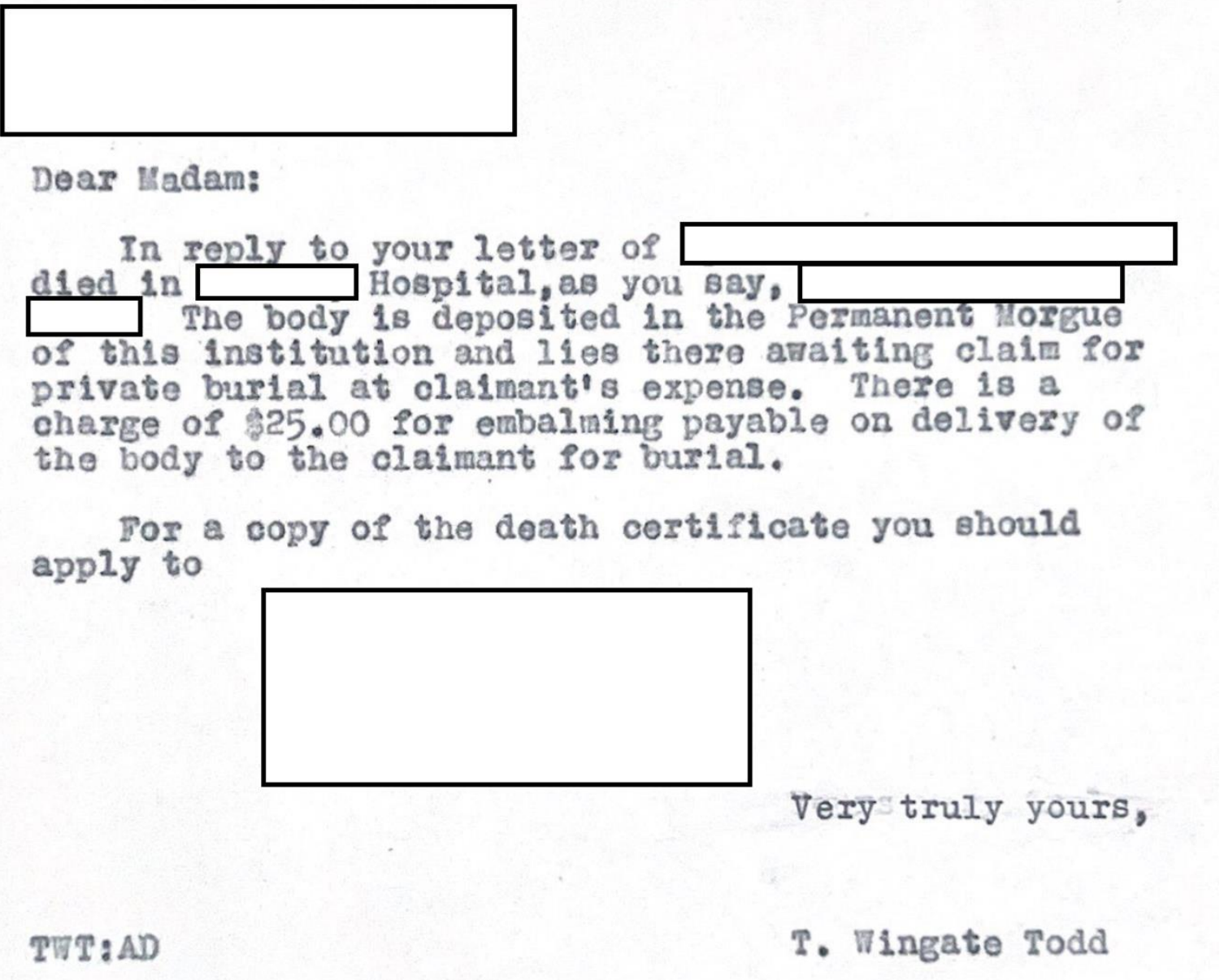


Fig 2. Letter from Todd with identifying information redacted

Case Study: HTH 1684

Demographic data provided for HTH 1684 indicate the individual is an approximately 85 year old, white male individual who died in 1928. Macroscopic analysis of this individual revealed bowing of the right femur (Fig. 3) and both tibiae indicative of residual rickets. Given only the above demographic information this individual may have included in previous research as representative of a general US-population, as these individuals were sourced from Cleveland dead. By extension the residual rickets exhibited by this individual would treated as informative of childhood vitamin deficiencies within a US context.

When located the death certificate information for this individual indicates they were born in Switzerland. This new information changes our interpretation of this individuals residual rickets. It would be more appropriate to consider the social, cultural, and environmental factors in Switzerland that might contribute to vitamin D deficiency, rather than the US, or even Cleveland. This adds much needed context to the interpretation of this pathology in HTH 1684.

Though this is just one individual of many the fact that roughly 65% of the white males in the collection are European immigrants has serious implications for how representative this sample is for method development but also opens up new possibilities for what questions can be answered through the HTOC.



Fig 3. Left and right femora of HTH 1684.

Conclusions

Future research will address specific temporal and geographic patterns of the collection:

- Body collection frequency coincides with the teaching year, with the least amount of bodies being collected in the summer months (June-August).
- Preliminary exploration of census data indicates Black Cleveland residents, and to a lesser degree European Immigrants, were sequestered into particular neighborhoods².
- If, proximity to Case Western Reserve University was a selection criteria certain neighborhoods are likely to be overrepresented in the HTOC.

The fact that there are hidden biases in identified human skeletal collections has serious implications for past method development and methods testing in the field of biological anthropology. A critical analysis of the formational drivers behind identified human skeletal collections is necessary to address these biases and better contextualize the live of the skeletonized individuals within.

Acknowledgements

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